

1st Quarterly Report - Public Page

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Project Title: Improving Magnetic Flux Leakage In-Line Inspection Corrosion Sizing Using Phased Array Guided Ultrasonic Waves

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In-line inspection is an integral part of many pipeline company integrity management plans. The most common inspection technology for both natural gas and liquid pipelines is magnetic flux leakage (MFL). MFL was first used in the 1960's and was significantly improved in the 1980's and 1990's. While improvements are still being implemented, the performance capability of MFL tools has remained relatively unchanged for a decade. The major attribute of MFL is the ruggedness of the implementations that enable this technology to perform under the rigors presented by the pipeline environment. The most commonly reported deficiency of this technology is the lack of precision in reported sizes of the anomalies detected. The nominal depth sizing specification of most MFL in-line tools is a tolerance of +/-10% of wall thickness with a certainty of 80% (4 of 5 depth readings are within the tolerance).

The goal of this development is to improve corrosion anomaly depth sizing of MFL tools by adding phased array Guided-Wave Ultrasonic inspection technology. The anticipated improved accuracy provided by this in-line inspection technology will help pipeline owners better assess corrosion anomalies and more accurately determine corrosion growth rates to enhance their integrity management programs.

In this quarter, a report was prepared documenting the strengths and weaknesses of MFL and GWUT for detection and sizing of corrosion anomalies. This will guide modeling and sensor development tasks to develop an improved corrosion assessment inspection technology for the pipeline industry.